



US Army Corps  
of Engineers

# DCAF Bulletin

Design Construction Analysis Feedback

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CEMP-CE (Construction)

Subject: INSTALLATION OF GYPSUM WALLBOARD ON STEEL STUDS

Applicability: Information

REFERENCES: CEGS 09250 GYPSUM WALLBOARD  
ASTM C 645 NON-LOAD BEARING STEEL STUDS, RUNNERS  
AND RIGID FURRING CHANNELS FOR SCREW  
APPLICATION OF GYPSUM BOARD  
ASTM C 754 INSTALLATION OF STEEL FRAMING MEMBERS  
TO RECEIVE SCREW ATTACHED GYPSUM  
ASTM C 840 APPLICATION AND FINISHING OF GYPSUM  
BOARD

DISCUSSION: The installation of gypsum wallboard over steel studs requires that the contractor have access to a number of ASTM publications. A few of the more critical standards listed in CEGS 09250 are referenced above. Government quality assurance personnel, in order to perform their jobs properly, must also have these references available. Based on feedback from DCE evaluations, the following areas have proven to be problems in the past.

OBSERVATION: Steel studs are not properly installed at corners, at intersections of partitions and at door and borrowed light frames.

SOLUTION: ASTM 754 requires that studs be located no more than 2 in. (50.8mm) in abutting partitions from through partitions (see Fig. 1) nor more than 2 in. from partition corners and other construction. At partition corners, a stud shall be installed so that it forms the outside corner. Following application of a single layer of gypsum board to this stud, a second stud shall be installed in the abutting runner and the web shall be screw attached through the gypsum board in to the flange of the first stud (see Fig. 2). A three stud conventional corner is an acceptable alternative (see Fig. 3). A stud shall be located adjacent to all door frames/jambs. The studs shall be securely anchored to the door frame or borrowed light frame by bolt or screw attachment. CEGS 09250 further requires that two studs placed back-to-back shall be used for framing solid core doors, doors over 3 feet (900 mm) wide and extra-heavy doors such as X-ray room doors. Over metal door and borrowed light frames, a cut to length section of runner shall be placed with a web-flange bent at each end horizontally and securely attached to the adjacent vertical stud. Where control joints are located over the door frame header a cut to length stud shall be positioned over the door frame header extending to the ceiling runner on both sides of the door frame (see Fig 4). The ceiling and floor runners must be securely anchored approximately 2 in.

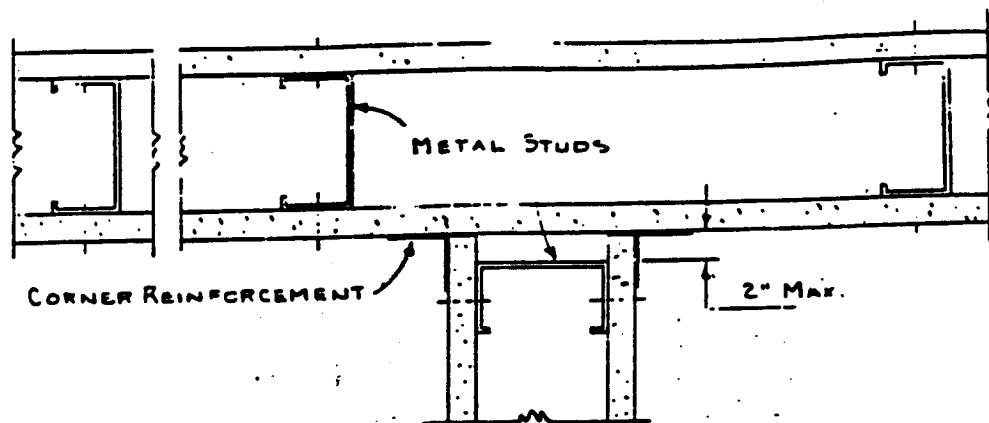


FIG. 1 Partition Corner Detail

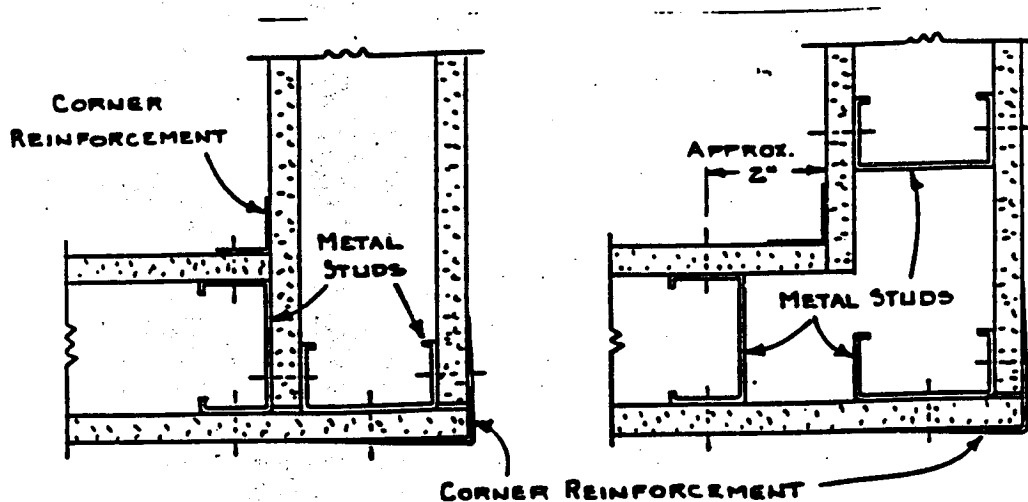


FIG. 2 Abutting Partition Detail

FIG. 3 Partition Corner Detail

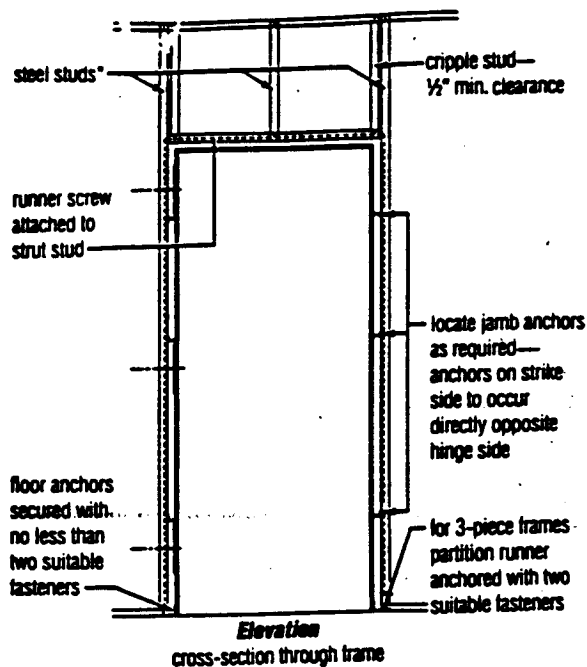
from the runner ends and not exceeding 24 in. (610 mm) on center. The studs shall be positioned vertically, shall engage both the floor and ceiling runners and be spaced no greater than the maximum frame spacing shown on the drawings. Studs located adjacent to door and window frames, partition intersections, and corners shall be anchored to runner flanges by screws, or by crimping at each stud and runner flange.

2. OBSERVATION: Chase wall partitions are not constructed properly.

SOLUTION: Partitions shall have no more than 20 in. (508 mm) between rows of studs. Where more than 20 in. is necessary, full partitions (gypsum board on both sides) shall be installed. Cross braces horizontally to opposite studs shall be installed not over 4 ft. (1.2 m) on center. The cross bracing can be either gypsum board gussets 12 in. (305 mm) deep attached with three screws in each stud web or a stud or runner with the brace web screw attached to the stud web with at least two screws. It is noted that 1 5/8-in. (41.3 mm) studs with a single layer of gypsum board are recommended for braced chase walls and closets only.

3. OBSERVATION: Gypsum wall board not installed properly to include fasteners breaking the paper surface, fasteners located too close to the edge of the board, wall board not staggered (allowing four corners to meet) and board installed horizontally when vertical installation is specified.

## Door Frames and Control Joints



Note: In long runs treat window openings in same manner as doors

FIG. 4

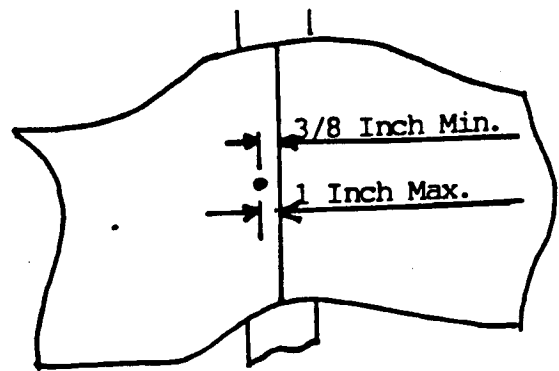


FIG. 5

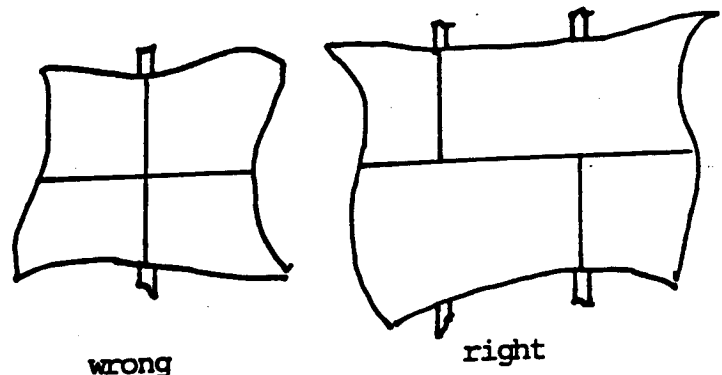


FIG. 6

**SOLUTION:** Fasteners shall be spaced not more than 1 in. (25.4 mm) from edges and not less than 3/8 in. (9.5 mm) from edges and ends (see Fig 5). Perimeter fastening into the ceiling or floor runners is not required or recommended except where fire ratings, structural performance, or other special conditions require it. Application of the fasteners shall proceed from the center of the gypsum board to the ends and edges. The screw shall be driven to provide screwhead penetration just below the gypsum board surface without breaking the surface paper of the gypsum board or stripping the framing member around the screw shank. Space the screws a maximum of 12 in. (304.8 mm) on centers for ceilings and 16 in. (406.4 mm) on center for walls where the studs are 16 in. on centers. Where the studs are 24 in. on center the maximum spacing between screws is 12 in. for both ceilings and walls. In single ply installations all ends and edges of gypsum board shall occur over framing members or other solid backing except where treated joints occur at right angles to framing or furring members. End joints shall be staggered and joints on opposite sides of a partition shall be arranged to occur on alternate framing members (see Fig. 6). Where gypsum board is to be applied to both ceilings and walls, apply the gypsum board first to the ceiling and then the walls.

**CONCLUSION:** Adequate preparation is required to assure that both the contractor and the Corps are aware of what the contract requires when quality is contingent on referenced standards. When unfamiliar with a referenced standard you must obtain that reference to be able to perform your job properly.

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